



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/698,985

10/31/2003

David DiFrancesco

021751-002110US

8846

68218

7590

05/12/2009

TOWNSEND AND TOWNSEND AND CREW, LLP/PIXAR
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

ANYIKIRE, CHIKAODILI E

ART UNIT

PAPER NUMBER

2621

MAIL DATE

DELIVERY MODE

05/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/698,985	Applicant(s) DIFRANCESCO ET AL.	
	Examiner CHIKAODILI E. ANYIKIRE	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-14,16-21,23,24,26-29,31-33 and 35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-14,16-21,23,24,26-29,31-33 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application is responsive to application number (10698985) filed on October 31, 2007. Claims 1-6, 8-15, 16-21, 23-24, 26-29, 31-33, and 35 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 19, 2009 has been entered.

Information Disclosure Statement

3. Acknowledgement is made of applicant's information disclosure statement.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-8, 12-14, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramsay et al (US 4,757,374).

As per **claim 1**, Ramsay et al disclose an apparatus for registering images from a source digital display device to individual frames of continuous movie film media comprising:

a film recording device (Fig 1, 32) configured to selectively and repeatedly expose the same individual frames of said film media (col 6 lines 39-55 and col 7 lines 46-50; Ramsay has a film recorder that exposes a film media continuously);

an electronically addressable flat panel display device (Fig 11, 45) driven directly from a computer and controllable at pixel level, said flat panel display device being configured as a source to display sequences of a plurality of source static images, in color component form, each said plurality of static images being associated for exposure with said single individual frames of the film media (col 3 lines 67 – col 4 lines 4 and col 7 lines 38-43); and

an alignment unit (Fig 1, 11, 26 and 27) coupled to the film recording device (Fig 1, 32) and to the display device (Fig 11, 45; Col 3 Ln 1-31),

wherein the alignment unit (Fig 1, 11, 26 and 27) is configured to position the flat panel display device (Fig 11, 45) with respect to the film recording device (Fig 1, 32) such that the film recording device (Fig 1, 32) can expose the film media to the plurality of static images with positionally repeatable registration of each color component of each pixel and in order to minimize optical aberrations at said film media (Col 3 Ln 1-31 and Col 4 Ln 17-38),

said flat panel display and said alignment unit cooperating to expose said individual frames of said film recording device so as to register final image features on said individual frames of said film media with resolution and contrast greater than inherent capabilities of said flat panel display and not presented by a single image of said flat panel display, including colors and contrast levels, that cannot be presented by said flat panel display (col 6 lines 39-55 and col 7 lines 46-50; the inclusion of color and contrast is inherent to the sequence of frames and would be included into the final image).

As per **claim 3**, Ramsay et al disclose the apparatus of claim 1, wherein the alignment unit (Fig 1, 11, 26 and 27) comprises a distance adjustment unit (Fig 3, 38) configured to adjust a distance from the film recording device to the display device for changing effective resolution (Col 4 Ln 17-38; once the completion of the process of the prior art is done the resolution of the final image is inherently effected changed).

As per **claim 4**, Ramsay et al disclose the apparatus of claim 3, further comprising: a control unit (Fig 3, 53) coupled to the distance adjustment unit (Fig 3, 38), wherein the control unit (Fig 3, 53) is configured to control the adjustment unit (Fig 1, 11, 26 and 27) to adjust the distance from the film recording device to the display device for changing effective resolution (Col 4 Ln 17-38; once the completion of the process of the prior art is done the resolution of the final image is inherently effected changed).

As per **claim 5**, Ramsay et al disclose the apparatus of claim 1, wherein the alignment unit further comprises an X-Y-Z gimbal (Fig 1, 38, 56, and 110) coupled to the

flat panel display device , wherein the X-Y-Z gimbal (Fig 1, 38, 56, and 110) is configured to adjust an orientation of the flat panel display (Fig 11, 45) with respect to the film recording device to compensate for said optical aberrations due to off-axis alignment between said film media and said flat panel display (Fig 1, 32; Col 4 Ln 67 – Col 5 Ln 5, Col 7 Ln 24-43, and Col 8 Ln 29 – 40; the compensation is inherent to the invention since the structure is capable of adjusting the orientation of the flat panel similar to applicant's invention).

As per **claim 6**, Ramsay et al disclose the apparatus of claim 1, wherein the film recording device (Fig 1, 32 and Fig 11, 35 mm camera) is one of the group: 16 mm film camera, 35 mm film camera (Fig 11, 35 mm camera; Col 7 Ln 60-62), 70 mm film camera.

As per **claim 8**, Ramsay et al disclose the apparatus of claim 1 further comprising an illumination source (Fig 11, 115) disposed relative to said flat panel display on a side opposite side from film recording device and configured to increase output brightness of at least a portion of the display of the plurality of images (Col 7 Ln 53-57) and to illuminate said flat panel display with back light for reproduction of said final image by said film recording device.

As per **claim 12**, Ramsay et al disclose a method of recording sequences of a plurality of images from a source digital display device onto individual frames of continuous film media, the method comprising:

positioning an optical axis of a display portion of an electronically addressable flat panel display (Fig 11, 45) that is driven directly from a computer and controllable at pixel

level to be approximately parallel to an optical axis (Fig 1, o) of a film recording device;
and, for each sequence, (Fig 1, 32; Col 3 Ln 32-40 and col 7 lines 38-43);

displaying a first image in color component form on the display portion of the flat panel display (Fig 11, 45) for a first duration (Col 3 Ln 67 – Col 4 Ln 4); and

exposing a first frame of film media (Fig 11, film strip) to the first image on the display portion for a second duration (Col 7 Ln 44-62);

displaying a second image in color component form on the display portion of the flat panel display for a third duration (Col 3 Ln 67 – Col 4 Ln 4); and

exposing said first frame of the film media to the second image on the display portion with positionally repeatable registration of each color component of each pixel for a fourth duration (Col 7 Ln 44-62);

repeating said displaying and exposing steps for each successive frame so as to register final image features on said individual frames of said film media with resolution and contrast greater than inherent capabilities of said flat panel display and not presented by any single source static image, of said flat panel display (col 6 lines 39-55 and col 7 lines 46-50).

As per **claim 13**, Ramsay et al disclose the method of claim 12, further comprising adjusting a focal length of a lens of the film recording device (Fig 12, 32) in response to a distance from the flat panel display (Fig 11, 45) to the film recording device (Fig 12, 32) and in response to a size of the display area (Col 8 Ln 21-56) and repositioning the optical axis of the display portion of the flat panel display to compensate for off-axis aberration (col 8 lines 21-56; the compensation is inherent to

the invention since the structure is capable of adjusting the orientation of the flat panel similar to applicant's invention).

As per **claim 14**, Ramsay et al disclose the method of claim 12, further comprising adjusting the second duration in response to the image to control said final image features (Col 7 Ln 63 – Col 8 Ln 20; the image being position affects the film strip's positioning and also the devices that control positioning both the image and film strip to be in the correct optical path).

Regarding **claim 23**, arguments analogous to those presented for claim 12 are applicable for claim 23.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2, 9, 10, and 15-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsay et al (US 4,757,374) in view of Treiber (US 6,359,676) in further view of well-knowledge.

As per **claim 2**, Ramsay et al disclose the apparatus of claim 1, wherein the flat panel display device is one of the group:

However, Ramsey does not disclose liquid crystal display (LCD), organic light emitting diode (OLED) display, plasma display, electro luminescent (EL) display, silicon crystal display, liquid crystal display on silicon (LCOS) and wherein the flat panel display is an array having at least 3480 x 2400 pixels.

In the same field of endeavor, Treiber et al disclose liquid crystal display (LCD) (Fig 2, 19), organic light emitting diode (OLED) display, plasma display, electro luminescent (EL) display, silicon crystal display, liquid crystal display on silicon (LCOS) (Col 4 Ln 17-26; further it is well-known that the flat panel display has an array of at least 3480 x 2400 when utilized in LCDs and can be used to view images at film resolutions - ex: Brett, US 6,118478 directed toward film resolution images).

It would have been obvious for one having skill in the ordinary art at the time of the invention to modify Ramsey with Treiber. The motivation of this combination is well-known in the art because LCDs produce electronically produced images, has a thin size which makes them more portable.

As per **claim 9**, Ramsay et al disclose the apparatus of claim 8, wherein the illumination source.

However, Ramsey does not disclose one of the group: light emitting diode, light emitting diode array, strobe lamp, strobe lamp array, digital light projector.

In the same field of endeavor, Treiber et al disclose one of the group: light emitting diode (Fig 1, 11; Col 3 Ln 62-66), light emitting diode array, strobe lamp, strobe lamp array, and digital light projector.

It would have been obvious for one having skill in the ordinary art at the time of the invention to modify Ramsey with Treiber. The motivation of this combination is well-known in the art because LEDs can produce more light per watt than an incandescent light, light up quickly, and are small.

As per **claim 10**, Ramsay et al disclose the apparatus of claim 8.

However, Ramsay et al does not teach wherein the illumination source provides different color illumination to different portions of the flat panel display device.

In the same field of endeavor, Treiber et al disclose wherein the illumination source provides different color illumination to different portions of the flat panel display device (Col 3 Ln 54- Col 4 Ln 2; the reference, Treiber et al, disclose color filters and scattering foil, which causes different color illuminations in different portions of the flat panel display device).

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Ramsay et al with Treiber et al. The advantage would be to selectively choose which areas of the display are illuminated by certain colors.

As per **claim 15**, Ramsay et al disclose the method of claim 12 wherein the flat panel display.

However, Ramsey does not disclose one of the group: digital flat panel display, analog flat panel display.

In the same field of endeavor, Treiber et al disclose one of the group: digital flat panel display (Fig 1, 2), analog flat panel display (Fig 1, 1; Col 3 Ln 54-57).

It would have been obvious for one having skill in the ordinary art at the time of the invention to modify Ramsey with Treiber. The motivation of this combination is well-known in the art because display system show images on a display screen.

Regarding **claim 16**, arguments analogous to those presented for claim 2 are applicable for claim 16.

As per **claim 17**, Ramsay et al disclose the method of claim 12 further comprising providing external illumination from an external illumination source to the flat panel display.

However, Ramsey does not teach wherein the external illumination source is one of the group: LED, LED array, strobe lamp, strobe lamp array, digital light projector configured to illuminate said flat panel display with back light for registering said final image features by said film recording device.

In the same field of endeavor, Treiber disclose one of the group: LED (Fig 1, 11; Col 3 Ln 62-66), LED array, strobe lamp, strobe lamp array, digital light projector.

It would have been obvious for one having skill in the ordinary art at the time of the invention to modify Ramsey with Treiber. The motivation of this combination is well-

known in the art because LEDs can produce more light per watt than an incandescent light, light up quickly, and are small.

As per **claim 18**, Ramsay et al disclose the method of claim 17.

However, Ramsay et al does not teach wherein the external illumination source comprises at least one digital light projector configured to display images in RGB and CMY color space.

In the same field of endeavor, the external illumination source comprises one or more digital light projectors configured to display images in RGB and CMY color space are common and well-known in the ordinary skill of art (Official Notice).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify Ramsay with these features. RGB is common for computing and CMY is common for printing.

As per **claim 19**, Ramsay et al disclose the method of claim 17 wherein the external illumination (Fig 11, 115) increases the brightness of at least a portion of the flat panel display for registering said final image features in the film media (Col 7 Ln 53-57).

As per **claim 20**, Ramsay et al disclose the method of claim 17.

However, Ramsay et al does not teach wherein a resolution of the flat panel display is different from a resolution of the external illumination source and further including the step of spatially dithering to register said final image features.

In the same field of endeavor, Treiber et al disclose wherein a resolution of the flat panel display is different from a resolution of the external illumination source (Col 3

Ln 54- Col 4 Ln 2; the reference, Treiber et al, disclose color filters and scattering foil, which causes different resolutions in different portions of the flat panel display device).

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Ramsay et al with Treiber et al. The advantage would be to selectively choose which areas of the display are illuminated by certain resolutions.

As per **claim 21**, Ramsay et al disclose the method of claim 20.

However, Ramsay et al does not teach wherein the external illumination source provides a first illumination color to a first portion of the display portion and provides a second illumination color to a second portion of the display portion at the same time.

In the same field of endeavor, Treiber et al teach wherein the external illumination source provides a first illumination color to a first portion of the display portion and provides a second illumination color to a second portion of the display portion at the same time.

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Ramsay et al with Treiber et al. The advantage would be to selectively choose which areas of the display are illuminated by certain colors.

9. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsay et al (US 4,757,374) in view of Hirata (US 2002/0167701).

As per **claim 11**, Hirata disclose wherein the illumination source comprises red LEDs, blue LEDs, and green LEDs, and wherein the red LEDs are configured to produce a peak wavelength selected from the group: 650 nm, 630 nm; wherein the blue LEDs are configured to produce a peak wavelength selected from the group: 550 nm, 530 nm; and wherein the green LEDs are configured to produce a peak wavelength selected from the group: 450 nm, 445 nm (paragraph [0038]).

10. Claims 22, 24, 25, 27-30, and 33-35 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsay et al (US 4,757,374) in view of Gould et al (US 3,824,336).

As per **claim 24**, Ramsay et al disclose a method for forming a recorded film media comprising:

aligning an optical axis of a film recorder to be substantially parallel to an optical axis of the digital flat panel display;

displaying a plurality of static images in color component form sequentially on a digital flat panel display (Fig 11, 45) driven directly from a computer and controllable at pixel level, said plurality of static images to be recorded onto a single frame of unexposed film media (Col 3 Ln 67 – Col 4 Ln 4);

aligning an optical axis (Fig 1, o) of a apparatus (Fig 1, 32) to be substantially parallel to an optical axis (Fig 1, o) of the digital flat panel display (Fig 11, 45; Col 3 Ln 32-40).

However, Ramsay et al does not teach controlling a shutter of the film recorder to expose the single frame of the unexposed film media with more than one image from

the plurality of images with positionally repeatable registration of each color component of each pixel to register final image features on the film media on said individual frames of the film media with resolution and contrast greater than inherent capabilities of the digital flat panel display and not able to be presented by a single displayed image.

In the same field of endeavor, Gould teaches controlling a shutter of the film recorder to expose the single frame of the unexposed film media with more than one image from the plurality of images with positionally repeatable registration of each color component of each pixel to register final image features on the film media on said individual frames of the film media with resolution and contrast greater than inherent capabilities of the digital flat panel display and not able to be presented by a single displayed image (Col 7 Ln 4-17 and 61-67, and Col 8 Ln 41-51).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify Ramsay et al with Gould et al. The advantage of the system is to allow modifications to one zoom system while the other is in use (Col 8 Ln 41-50).

Regarding **claim 27**, arguments analogous to those presented for claim 2 are applicable for claim 27.

Regarding **claim 29**, arguments analogous to those presented for claim 17 are applicable for claim 29.

As per **claim 33**, Ramsay et al discloses the method of claim 29 wherein the external illumination source comprises light guides (Fig 11, 116; Col 53-57).

As per **claim 35**, Ramsay et al discloses the method of claim 24 further comprising printing an interpositive from the recorded film media (Col 7 Ln 44-62).

11. Claim 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsay et al (US 4,757,374) in view of Gould et al (US 3,824,336) in further view of Fount et al (US 5,249,056).

As per **claim 26**, the modified invention of Ramsay et al disclose the method of claim 24.

However, Ramsay et al does not explicit teach wherein spatial dithering techniques are used for images from the plurality of images.

In the same field of endeavor, Fount et al teach wherein spatial dithering techniques are used for images from the plurality of images (Col 8 Ln 5-25).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the modified invention of Ramsay et al with Fount et al. The advantage is that it improves the quality of the video image (Col 8 Ln13-15).

12. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramsay et al (US 4,757,374) in view of Gould et al (US 3,824,336) in further view of Treiber (US 6,359,676).

As per **claim 31**, the modified invention of Ramsay et al disclose the method of claim 24 further comprising: illuminating the flat panel display (Ramsay et al, Fig 11, 45)

with an external illumination source (Ramsay et al, Fig 11, 115) disposed to provide backlight, wherein the external illumination source is an addressable source (Col 7 Ln 44-62).

However, the modified invention of Ramsay et al does not teach such that the external illumination source illuminates different portions of the flat panel display with different illumination colors.

In the same field of endeavor, Treiber teach such that the external illumination source illuminates different portions of the flat panel display with different illumination colors (Col 3 Ln 54- Col 4 Ln 2; the reference, Treiber et al, disclose color filters and scattering foil, which causes different color illuminations in different portions of the flat panel display device).

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Ramsay et al with Treiber et al. The advantage would be to selectively choose which areas of the display are illuminated by certain colors.

As per **claim 32**, the modified invention of Ramsay et al disclose the method of claim 31, wherein the external illumination source (Ramsay et al, Fig 11, 115).

However, Ramsay et al does not teach wherein the external illumination source also illuminates different portions of the flat panel display with different intensities.

In the same field of endeavor, Treiber et al disclose wherein the external illumination source also illuminates different portions of the flat panel display with different intensities (Col 3 Ln 54- Col 4 Ln 2; the reference, Treiber et al, disclose color

filters and scattering foil, which causes different color illuminations in different portions of the flat panel display device).

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Ramsay et al with Treiber et al. The advantage would be to selectively choose which areas of the display are illuminated by certain colors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621
/Chikaodili Anyikire/
Patent Examiner AU 2621